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AUTHOR Glenny, Lyman
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ABSTRACT

The launching of Russia's sputnik in 1957 caused a reassessment of scientific manpower needs in the U.S. and drastic shortages of all types of highly trained specialists was predicted by 1970. This myth continued until the late 1960's when proposals were still being made to double federal aid for graduate students. Federal aid induced state colleges to embark upon advanced graduate work, and national production of doctorates almost tripled from 1958 to 1969--from 8,942 to 25,734. It is now obvious that in the foreseeable future the excess of doctorates over established needs will be substantial. Five closely interrelated problems are now facing public and private institutions and the states: (1) underwriting the costs; (2) reducing anticipated surplus production; (3) maintaining the quality of the degree; (4) changing the character of some doctoral degree training; and (5) absorbing surplus doctorate holders. There is a need for a careful assessment of basic needs, and a careful allocation of resources to meet them. (AF)

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GRADUATE EDUCATION ISSUE

What to do about graduate education is probably one of the most frequently discussed topics in higher education today. This issue of The Research Reporter *brings together three important contributions on the subject. Dr.* *ice president of the American* *just completed a study that* *y of graduate instruction as* *perceive it. Chancellor Allan* *rsity predicts that the 1970s* *y different for the graduate* *lenny, Associate Director of the Center for Research and Development, analyzes five major issues that must be faced in planning for doctoral education. Dr. Glenny's paper was presented at the Southern Regional Education Board's annual meeting in Houston, Texas, June 11–12, 1970. The papers of Dr. Cartter and Dr. Roose were presented at a conference on "Changing Patterns in Graduate Education" at St. Louis, October 2–3, 1970, sponsored by the Center for Research and Development in Higher Education. Excerpts of all papers of this conference can be obtained by writing to:* Publication Department, Center for Research & Development in Higher Education.

K.P.C.

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DOCTORAL PLANNING FOR THE 1970s

LYMAN GLENNY

The major problems facing graduate education planning in the 1970s result from an event of the 1950s; Russia's launching of Sputnik. The United States' reaction to this tremendous scientific achievement was a reassessment of the nation's manpower needs for researchers, developers and teachers. At the time manpower estimates predicted that by 1970 there would be a drastic shortage of all types of highly trained specialists.

In the 1960s both government and college officials continued to estimate needs for greater and greater productivity from the graduate schools. And as late as the spring of 1969, the Rivlin proposal suggested that the number of doctoral students to be given federal aid should be almost doubled. A similar recommendation was made by the Carnegie Commission on Higher Education (1968). Later in 1969 Congress seriously considered several bills supporting these proposals for possible implementation.

Federal aid for "centers of excellence" and for graduate students induced (or seduced) comprehensive state colleges to embark upon advanced graduate work. Federal funds stimulated, but state funds largely underwrote, the numerous new doctorate institutions that came into existence in the 1960s. Some were former teachers colleges, some state colleges, and a few were small universities—perhaps in name only.

National production of doctorates almost tripled from 1958–1969: from 8,942 to 25,734 (USOE, 1967). By 1976–77 the U.S. Office of Education estimates that 38,700 will be produced per year—about 13,000 more than in 1969. In a letter to the author, Allan Cartter, Chancellor of New York University, estimates that the annual doctorate capacity of the institutions currently authorized to offer degrees will be between 40,000 and 50,000 by 1976. More recently Lewis Mayhew predicted a figure of 70,000. But, in 1964, Cartter suggested that the then existing shortages would continue only through the late 1960s and that in the early 1970s surpluses would occur. From the evidence he seems to be right. What does he now say about the future?

He and a colleague, Robert Farrell, estimate that in 1980 there will be 24,550 new doctorates available for teaching but only 11,600 vacancies, even if we improved the student-faculty ratio by one percent a year (1969). Cartter also estimates that the proportion of doctorates who go into teaching will drop from roughly 50 percent, which has prevailed for many years, down to 20 or 30 percent by 1980. Thus, even with the reduced figures which he suggests, the excess of doctorates over established need will be substantial.

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Institutions and states must set new priorities between doctorate and undergraduate education and public service

Other sources which project future needs disagree with Cartter. The U.S. Office of Education projects a need for a total of 522,000 teachers in 1975 (USOE, 1968). Cartter estimates 368,000 or 154,000 less. Of these numbers of teachers about 44 percent would be doctorate holders.

Some planners indicate that if we give high national priority to a number of other pressing national goals, there would be no surplus of doctorates. That, of course, is the difficulty in predicting the future. All future estimates are built on a little experience, many assumptions, and much speculation about events and priorities. What current events have implications for planning for future doctorate production? First and most important, the federal government has apparently read, digested, and believed the Cartter-Farrell projections made in 1969. From stimulation and heavy subsidy, the federal government is moving back to the free market system of graduate education.

The consequences to institutions and to the states are already severely felt. During the 1960s some of our greatest universities, both public and nonpublic, had become highly dependent on federal subsidies for their operating costs. Many of these institutions are geared up for the new high level of graduate production. Professors with tenure are on payrolls, expensive hardware is in place, and specially designed buildings have been constructed. Moreover, the demands of the newly authorized doctorate institutions for additional new programs continue unabated, as do the requests of state colleges for initial authority to offer advanced degrees.

Should the states follow the lead of the national government in abandoning graduate education? Such action would be disastrous to the future well-being of the nation in both social and economic terms. The very bright and very talented must be educated in order to provide that stimulus to creativity on which an expanding and socially conscious society depends. Surpluses being far more desirable than shortages, a monumental planning problem confronts every state as it looks foreward to only a moderately expanding need for doctorate degree holders compared with the great expansions of the recent past. What are the specific problems and what should be done about them?

Without dwelling on a myriad of minor issues, there are five grave, closely interrelated problems facing public and nonpublic institutions and the states: 1) underwriting the cost; 2) reducing anticipated surplus production; 3) maintaining the quality of the degree; 4) changing the character of some doctoral degree training; and 5) absorbing surplus doctorate holders.

COSTS

A recent estimate by the National Science Foundation placed total graduate education costs for the nation in 1970 in excess of undergraduate expenditures. Yet the ratio of undergraduate to graduate enrollment is 10–1. Really sound unit costs in graduate education are difficult to find. Estimates range from an average annual cost per student for doctoral work from $3,000 to $10,000 for operations alone. Cartter recently estimated $4,090 for the Humanities, $5,320 for Social Sciences, and $7,040 for the Sciences. By multiplying these figures by the number of years the average student takes to get the doctorate, one can estimate the cost for each of those who graduate. Additional costs are accrued by those who enter a program but drop out before receiving a degree. Allowing for the attrition factor, Cartter states, for example, that the average cost of a science degree is $62,000.

As a means of reducing the unit cost of a degree some institutions are forcing students to complete their work in fewer years, using greater care in admission in order to lessen the attrition rate, encouraging much more self-help, and much less course work.

The cost of advanced graduate education will nonetheless remain high. The state and the institutions must ask themselves this question: *In a period of oversupply of doctorates and a short supply of money, what is the marginal utility of investing in another doctorate degree rather than investing the same money in some other level of education?* The answer will vary from state to state and college to college, depending on the condition of higher education; its accessibility, its scope, and its quality. For example, if the state's college-going rate is low, it may be more prudent to provide for additional students at the two- or four-year level than to invest in an additional doctorate degree—especially if the quality of the doctorate program is less than excellent. Or perhaps it may be necessary to improve the quality or scope of undergraduate education. Institutions and states must set new priorities between doctorate and undergraduate education and public service.

REDUCTION IN OUTPUT

All projections of doctorate degrees assume that current trends will be only slightly modified for the future. There has been a fall-off in the rate of entry to graduate education at some Ivy League schools. Other institutions, including some of the large state universities, are also experiencing some leveling off. Beyond this, some big public universities have fewer freshmen as well as graduate students applying than last year. It is not beyond reason to assume that the market itself will quickly adjust to demand.

Working against the trend toward reduction will be two other trends. First, minority students, long denied graduate education in any large numbers, will be increasing their enrollment as high school and college graduation rates improve for them. However what the actual effects will be on advanced graduate levels is difficult to estimate today.

The second counter-reduction trend is the result of three factors: 1) the intense proselytizing by institutions which have started new doctorate programs but have not yet obtained sufficient enrollments to justify their continued operation; 2) the effort to increase the number of new doctorate programs by these same institutions; and 3) the thrust of still other colleges to obtain initial authorization to offer them.

The latest available figures reported by Heiss (1970) show that 50 institutions in the country produce 90 percent of all doctorates and the remaining 10 percent are produced by the other 190 doctoral institutions. One might conclude that all 190 of the other universities should close out their programs, thus saving a great deal of money and simultaneously reducing doctorate production by 10 percent. However, some of these schools have sufficiently well-founded programs so that it would be unwise to eliminate them.

Nevertheless, many low production doctoral programs should be eliminated and all but a few of the 190 institutions should refrain from starting additional programs. Indeed, perhaps no institution should start a new program unless it is highly innovative, fully interdisciplinary, or in a discipline where there is a national shortage. Programs that may well be eliminated are those which have not or will not reach optimum enrollments before 1974 or 1975. If they have not done so by then, they are unlikely to thereafter. Other programs for elimination may be those which are few in number in an institution and are in fields already showing large surpluses.

Elimination of a program has traumatic effects. The institution and its faculties have worked long and difficult hours in planning and initiating the programs, even on a limited scale. Also, they have probably spent years obtaining staff and resources as well as authorization to offer a doctorate. No school will want to give up a program, although an objective view might dictate otherwise.

The watchwords for the 1970s should be: Limit the number of doctorate programs and improve the quality

MAINTAINING QUALITY OF THE DOCTORATE

The proliferation of doctoral programs and doctorate institutions has significantly increased the cost of higher education which concomitantly has had a negative influence on quality. Very few of the newly authorized programs across the nation are being financed at levels which approach the average for the top 50 institutions. Financing has not been sufficient to provide good libraries, equipment, buildings, and faculty. Most of the newly born are struggling for life by sucking the blood out of the undergraduate programs.

In states which have limited financial resources, it would seem sensible to bring undergraduate educational levels up to or beyond national norms rather than to increase the amount of graduate education. Unlike high school graduates or those holding bachelors degrees, for whom local markets absorb the majority, doctorate degree holders are in a national market. States which have limited resources should not, out of false pride, try to compete with the well-to-do states in the numbers of doctoral students produced, but rather hire the necessary graduate degree holders in the open market. That market will be plentifully supplied during the next decade and beyond. This also means that those unfortunates who do earn doctorates at second- or third-rate graduate schools will find little or no demand for their services in a glutted market.

The marginal student, when he becomes aware of the oversupply of PhDs, will be wary of undertaking work beyond the master's. The highest ability students who go on will be attracted, as they are now, to the better graduate schools, leaving the remaining students for the 190 or so institutions with the smallest and poorest capacity to produce quality work. Moreover, because of the small enrollments, many of these programs may have unit costs which exceed those in the better institutions.

The watchwords for the 1970s should be: *Limit the number of doctorate programs and improve the quality.*

CHARACTER OF THE DOCTORATE DEGREE

Part of the high cost of doctorate education is not reflected in dollars but rather in the inappropriateness of the training which the graduate receives for the kind of work he is destined to perform. Historically, about half of the doctorates produced have gone back into higher education. Many of these have located in graduate schools in order to replicate themselves and do research. Most have joined institutions which provide the bulk of undergraduate education where research is tolerated but not venerated. Teaching is the number one, and perhaps the only, major chore. Yet the doctorate holder has not been trained to teach. He has been trained to do research in some narrowly defined field. For many years now, foresighted scholars and planners have been concerned with the lack of a teaching doctorate. Over ten years ago Earl McGrath, the former federal Commissioner of Education, wrote and spoke often about the need for a college teaching profession whose members possess appropriate teacher-training degrees.

As we look toward the next decade, it would be tragic, if not disastrous, for the surplus products of our research-oriented graduate schools to end up teaching in the junior and community colleges. These are institutions which require the highest caliber of teaching, attracting as they do students with a very wide range of interests and abilities. The open-door, four-year colleges are just as vulnerable. As Dunham (1970) recently wrote, "PhD training is irrelevant to the realities of most classrooms." In order to prevent this unfortunate outcome, the graduate schools need to adopt new requirements for some PhDs or provide a new doctorate degree with emphasis on teaching. The pressure for this change is mounting.

At the last annual meeting of the American Association of State Colleges and Universities, the guest speakers urged the state colleges not to emphasize graduate education and research but rather, as Woodring stated, ". . . show some imagination" and "become distinctive, first-rate universities of a new kind."

If Cartter's estimate that 20 to 30 percent of the doctorates will enter college teaching is correct, then about a fourth of all doctorates produced might be trained to teach. Unless teaching as a profession for the doctorate holder becomes as accepted and as honored a mode of life as research, and is rewarded appropriately, it seems improbable that undergraduate education will be improved and even probable that junior college education will be impaired.

The narrowness of doctorate training limits the potential usefulness of the degree not only for teaching but also for many other fields of endeavor. The National Science

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Foundation (1969) became increasingly concerned as the number of degree holders began to exceed new positions in the traditional fields. Its most recent report states:

> It is therefore very important that new Ph.D.'s be offered options of graduate programs including some that are most suitable for these new activities. Furthermore, students must not be educated with "false" aspirations for solely research careers. This training issue will make it necessary for universities to examine their graduate programs and probably to develop different and new programs for PhDs who do not intend to enter research careers."

Thus a redirected emphasis of much of graduate education is as essential as is control of numbers and quality. Both the distinguished institutions and those "emerging" universities must now reassess the role of doctorate education for the 1970s and beyond.

ABSORBING THE SURPLUS DOCTORATES

Some who venture observations about the coming decade refuse to believe that a real surplus of doctorates is in the making. Rather, they take the view that we can never overeducate and that junior colleges and other social agencies previously prevented from hiring doctorates because of their scarcity will have available to them these highly trained specialists. Ecology, racism, housing, transportation, and poverty are cited as activities which will absorb these high talents and training.

We do not know the exact problems on which doctorate holders will work, but all surpluses will be absorbed nevertheless. People with doctorates must also eat and thus work. So it seems probable that they may indeed take positions for which we would now consider them overtrained. Many doctorates are perhaps already in such positions.

The question, then, is not one of outright unemployment for the surplus doctorates, but whether it is more desirable public policy to provide overtraining for some persons while allowing a smaller than necessary portion of public resources to go for other social problems, including the improvement of undergraduate education.

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In avoiding an overreaction to surpluses on the one hand, we must keep in mind that some of the current voices advising us that "all is well for the decade if we just leave things alone," are also the same voices which during the 1960s misled us into thinking we would continue to have serious shortages of doctorates in the 1970s.

On the other hand, it would be foolhardy to take the position that drastic cutbacks should be made in doctoral production across the land. Rather, the need is for a careful assessment of basic needs and a careful allocation of resources to meet them. Modest adjustments of the kind recommended here are in order in many states. Institutional governing boards, statewide coordinating boards, as well as governors, legislators, and regional accrediting associations, must take a long-range view—at minimum 10 to 15 years. It took about 10 years of massive effort to gear up the graduate schools to meet 1969 needs. Now it would be unwise to make such dramatic reductions in graduate opportunintes as to place ourselves in the 1980s in the same jeopardy as we found ourselves in the 1960s.